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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/133,989	08/14/1998	TRUNG T DOAN	93-0421.03	7303

7590 08/01/2002

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EXAMINER

EDWARDS, LAURA ESTELLE

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 08/01/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

AS-20

Office Action Summary	Application No.		Applicant(s)	
	09/133,989		DOAN, TRUNG T	
	Examiner		Art Unit	
	Laura E. Edwards		1734	

-- Th MAILING DATE of this communication appears n the cover sheet with the correspond nc addr ss --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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Reopening of Prosecution

In view of the appeal brief filed on 5/10/02 and the results of an appeal conference with Richard Crispino and Jan Silbaugh on 6/25/02, PROSECUTION HAS BEEN REOPENED!

New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 14, 22-29, and 31-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Honda (JP 8-5825) with Fisch (US 4,314,022) cited to show inherency.

Honda teaches a bead remover for a rectangular shaped wafer comprising a negative pressure or vacuum mechanism spaced from a bead on the wafer while operating on the bead and a dispensing mechanism aligned with the negative pressure mechanism wherein the dispensing mechanism delivers chemical or a developer solution that removes the bead. Honda does not explicitly recite that the developer is a solvent for the resist, however, this feature is inherent as developers act by dissolving a photoresist layer as evidenced by Fisch (see claim 5). Therefore, inherently, the Honda developer solution would be a solvent for the edge bead.

With respect to the use of a solvent nozzle above and below the wafer as well as the use of a vacuum mechanism above and below the wafer, Honda recognizes the use of developer solution nozzles above and below the wafer as well as the vacuum mechanism encompassing or surrounding the nozzles. The Honda apparatus is deemed spaced from the substrate as the substrate is given adequate space to enter into the apparatus via a slot (not numbered) as shown in Fig. 3.

Claim 28 is rejected under 35 U.S.C. 102(b) as being anticipated by Isono (JP.2-157763).

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Isono teaches a chemical remover for a substrate comprising a nozzle (4) directed toward the substrate while the substrate is processed and moved and the nozzle being coupled to a source of chemical or solvent (10) to dissolve material on the substrate and a vacuum device (6) spaced from the material and directed toward the nozzle during processing.

Claims 12, 14, 17-21, 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato (US 5,993,547).

Sato teaches a processor for a spin coating device including a chuck (3a) defining a wafer (1) accommodation area comprising at least one dispenser (5a) of a first material that is a solvent (see col. 5, lines 10-18) with respect to a second material on a wafer configured to occupy the wafer accommodation area, and a suction mechanism (9a) around the solvent dispenser and offset from the wafer accommodation area during an operational mode of the spin coating device.

Claim Rejections - 35 USC § 103

Claims 12, 13, and 17-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kottman et al (US 4,685,975) in view of Honda (JP 8-5825).

Kottman et al teach an apparatus for cleaning the edge of a coated wafer while it is spinning comprising a spinning chuck (24) having the wafer (26) thereon and at least one solvent dispensing mechanism (46, 55) for dispensing a solvent onto the wafer to remove an edge bead of coating material. Kottman et al do not teach or suggest the use of a suction mechanism offset from the wafer in combination with the solvent nozzle to remove the edge bead while the wafer

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is spinning. However, it was known in the art at the time the invention was made, to use a suction mechanism surrounding but spaced from the wafer in combination with at least one liquid dispensing nozzle to facilitate removal of the edge bead and excess photoresist material from the edge of a wafer as evidenced by Honda (see abstract). It would have been obvious to one of ordinary skill in the art to provide a suction mechanism as taught by Honda surrounding the solvent nozzle of Kottman et al in order to facilitate removal of excess materials from the edge of a wafer.

With respect to the use of a solvent dispenser above and below the wafer, Kottman shows the solvent dispenser below the wafer in Fig. 1 but teaches that the dispenser can also be above the wafer (see col. 5, lines 62-65). Therefore, it would have been obvious to one of ordinary skill in the art to provide solvent nozzles above and below the wafer in the apparatus defined by the combination above in order to effectively remove the edge bead material from the periphery of the wafer.

With respect to each solvent dispensing nozzle being perpendicular to the wafer, Honda recognizes the dispensing nozzle being perpendicular to the wafer such that one of ordinary skill in the art would have found it obvious as an engineering design choice to make each solvent nozzle perpendicular to the wafer.

Claims 14, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida et al (JP 56-73579) in view of Honda (JP 8-5825).

Uchida et al teach an apparatus for removing coating from the edge of a coated substrate comprising a negative pressure mechanism configured to operate on a thick film part or bead and

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a dispensing mechanism aligned and concentric with the negative pressure mechanism to apply solvent or water to remove the bead (See Figs. 1-3). Uchida et al show in Fig. 3, the tip of the apparatus contacting the edge bead but also refer to a gap of 180μ between suction port (2) tip and the substance to be coated (see the example on the last page of the translation). Uchida et al do not illustrate the apparatus being spaced above the thick film part. However, it was known in the art, at the time the invention was made, to configure an edge bead removal apparatus including a solvent dispenser and vacuum mechanism, out of contact with the wafer of edge bead thereon as evidence by Honda (see Fig. 3). In view of the conventional edge bead removal apparatus as taught by Honda, it would have been obvious to one of ordinary skill in the art to space the Uchida et al apparatus a predetermined distance from the coated substrate in order to prevent wear and tear to the apparatus tip and eliminate excess cleaning of the tip. Furthermore, it is deemed to be within the level of ordinary skill in the art to position the Uchida et al apparatus an appropriate distance from the surface of the substrate to remove one or plural layers of coating material from the edge of the substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Edwards whose telephone number is (703) 308-4252. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (703) 308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7115 for regular communications and Same as above for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Laura E. Edwards
Primary Examiner
Art Unit 1734

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July 29, 2002